Fall 2016 CIS 515

Fundamentals of Linear Algebra and Optimization
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Project 1

Adapt N=5 Case

(C1)

$$
\begin{aligned}
b_0^1 &= d_0 \\
b_1^1 &= d_1 \\
b_2^1 &= \frac{1}{2}d_1 + \frac{1}{2}d_2 \\
b_3^1 &= \frac{1}{4}b^1 2 + \frac{1}{2}b_1^2 = \frac{1}{4}d_1 + \frac{7}{12}d_2 + \frac{1}{6}d_3
\end{aligned}
$$

(C2)

$$
\begin{aligned}
b_0^2 &= \frac{1}{2}b_2^1 + \frac{1}{2}b_1^2 \\
&= \frac{1}{4}d_1 + + \frac{7}{12}d_2 + \frac{1}{6}d_3 \\
b_1^2 &= \frac{2}{3}d_2 + \frac{1}{3}d_3 \\
b_2^2 &= \frac{1}{3}d_2 + \frac{2}{3}d_3 \\
b_3^2 &= \frac{1}{2}b^2 2 + \frac{1}{2}b_1^3 = \frac{1}{6}d_2 + \frac{4}{6}d_3 + \frac{1}{6}d_4
\end{aligned}
$$

(C3)

$$
\begin{aligned}
b_0^3 &= \frac{1}{2}b^2 2 + \frac{1}{2}b_1^3 = \frac{1}{6}d_2 + \frac{4}{6}d_3 + \frac{1}{6}d_4 \\
b_1^3 &= \frac{1}{2}d_3 + \frac{1}{2}d_4 \\
b_2^3 &= d_4 \\
b_3^3 &= d_5
\end{aligned}
$$

Adapt N=6 Case

(C1)

$$
\begin{aligned}
b_0^1 &= d_0 \\
b_1^1 &= d_1 \\
b_2^1 &= \frac{1}{2}d_1 + \frac{1}{2}d_2 \\
b_3^1 &= \frac{1}{4}b^1 2 + \frac{1}{2}b_1^2 = \frac{1}{4}d_1 + \frac{7}{12}d_2 + \frac{1}{6}d_3
\end{aligned}
$$

(C2)

$$
\begin{aligned}
b_0^2 &= \frac{1}{2}b_2^1 + \frac{1}{2}b_1^2 \\
&= \frac{1}{4}d_1 + +\frac{7}{12}d_2 + \frac{1}{6}d_3 \\
b_1^2 &= \frac{2}{3}d_2 + \frac{1}{3}d_3 \\
b_2^2 &= \frac{1}{3}d_2 + \frac{2}{3}d_3 \\
b_3^2 &= \frac{1}{2}b^2 2 + \frac{1}{2}b_1^3 = \frac{1}{6}d_2 + \frac{4}{6}d_3 + \frac{1}{6}d_4
\end{aligned}
$$

(C3)

$$
\begin{aligned}
b_0^3 &= \frac{1}{2}b^2 2 + \frac{1}{2}b_1^3 = \frac{1}{6}d_2 + \frac{4}{6}d_3 + \frac{1}{6}d_4 \\
b_1^3 &= \frac{2}{3}d_3 + \frac{1}{1}d_4 \\
b_2^3 &= \frac{1}{3}d_3 + \frac{2}{3}d_4 \\
b_3^3 &= \frac{1}{2}b_2^3 + \frac{1}{2}b_4^1 = \frac{1}{6}d^3 + \frac{7}{12}d_4 + \frac{1}{4}d_5
\end{aligned}
$$

(C4)

$$b_0^4 = \frac{1}{2}b_2^3 + \frac{1}{2}b_4^1 = \frac{1}{6}d^3 + \frac{7}{12}d_4 + \frac{1}{4}d_5$$
$$b_1^4 = \frac{1}{2}d_4 + \frac{1}{2}d_5$$
$$b_2^4 = d_5$$
$$b_3^4 = d_6$$

Adapt N=4 Case Not yet updated

(C1)

$$b_0^1 = d_0$$
$$b_1^1 = d_1$$
$$b_2^1 = \frac{1}{2}d_1 + \frac{1}{2}d_2$$
$$b_3^1 = \frac{1}{4}b^1 2 + \frac{1}{2}b_1^2 = \frac{1}{4}d_1 + \frac{7}{12}d_2 + \frac{1}{6}d_3$$

(C2)

$$b_0^2 = \frac{1}{2}b_2^1 + \frac{1}{2}b_1^2$$
$$= \frac{1}{4}d_1 + +\frac{7}{12}d_2 + \frac{1}{6}d_3$$
$$b_1^2 = \frac{2}{3}d_2 + \frac{1}{3}d_3$$
$$b_2^2 = \frac{1}{3}d_2 + \frac{2}{3}d_3$$
$$b_3^2 = \frac{1}{2}b^2 2 + \frac{1}{2}b_1^3 = \frac{1}{6}d_2 + \frac{4}{6}d_3 + \frac{1}{6}d_4$$